



JOHN A. SANCER  
NICHOLAS INC.

## Fiscal Impact Analysis Efforts For MX Missile Deployment In Utah

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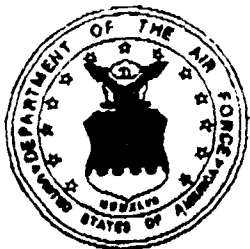
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1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Lichtenthaler and Whistler (1973).

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains.

Figure 1. The effect of the concentration of the polymer on the  $\alpha$ -transition temperature of the polymer. The concentration of the polymer was 0.1 g/ml.



**Air Force  
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16 JUL 93

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RECONNAISSANCE REPORT:  
FISCAL IMPACT ANALYSIS EFFORTS FOR  
MX MISSILE DEPLOYMENT IN UTAH

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PART 1: REVIEW OF PROGRESS TOWARD COMPLETION OF A FISCAL IMPACT  
ANALYSIS

A. Review and Evaluation of Phase 1 and 2 Reports: General Needs

The Phase 1 and 2 Reports generally represent a sound beginning for a fiscal impact analysis of MX deployment in Utah. The comments that follow point out general concerns regarding the reports and recommendations for improving the substance and presentation of the material contained in the reports.

Expenditure Data

The reports do not have a clear, concise presentation of operating and capital costs by service and sub-area for the most recent fiscal year or past years. This information is needed as an indication of current fiscal effort and spending trends within the various service areas. This expenditure data, once gathered and compiled, can be compared and combined with information regarding service levels, to obtain costs per unit of service and any significant cost trends. These cost-per-unit measures for current services are critical in projecting future costs in the baseline and with-MX scenarios.

Recommendation: Expenditure data must be gathered and compiled by public service and by jurisdiction. Operating and capital costs must be compiled separately. A simple format must be developed which permits presentation of service levels corresponding to expenditure levels and translation of total costs to unit costs. Since Paul Nelson has already gathered expenditure data for the northern counties, and our firm has gathered data for most jurisdictions in the southern counties, the main task remaining is compilation of the data in the appropriate format. A separate compilation of salary levels by personnel classification by jurisdiction is also needed in order to project future costs. Most of this data has been gathered for the southern counties but not for the northern counties.

Revenue Data

The Phase 1 and 2 reports do not contain a concise presentation of revenue data by jurisdiction. These data are needed in order to understand how public services are currently financed, and how this

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financing may change as a result of MX deployment. These data are necessary for projection of revenues in both the baseline and with-MX scenarios.

Recommendation: Revenue data by major category within jurisdiction must be gathered and compiled. These data must then be analyzed to determine the factors that cause variation in the categories of revenue. The analysis should focus on methods of collection and distribution as prescribed by law, with special attention as to how these methods may affect the receipt of revenues under both the baseline and with-MX scenarios. The analysis should note the purposes for which some revenues may be restricted (e.g., gas taxes). The analysis must ultimately identify legal and administrative constraints on the timely receipt of revenues, particularly in response to changes in population and other factors causing variation in receipts. The extent of potential time lags in receipts must be analyzed. It is also necessary to characterize sources of funding for each service area. More specifically, proportions of revenues provided by state and federal restricted use funds should be indicated for each service category. The revenue study recently initiated by John Short Associates should fulfill most of the requirements outlined here.

Trends in Expenditures and Revenues

In addition to not providing data regarding current expenditure and revenue data for the various jurisdictions in the impact area, the reports also do not show trends in expenditures and revenues. If gathered, these data could be compared to population to determine whether revenues and expenditures for specific services have been increasing faster than demand for the services, and to use this comparison to project future expenditures and revenues.

Recommendation: Data regarding revenues and expenditures by each jurisdiction and by major category in the impact area should be gathered and compiled for fiscal years 1970-71, 1975-76, and each subsequent year until the present. These data should then be compared to population and other demand measures to develop revenue and expenditure estimating measures, deflated by the appropriate deflator to determine whether real expenditures and revenues per demand unit or source have increased or decreased. The trend regarding real revenues and expenditures can then be used to project future revenues and expenditures.

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Bonding Capacity

The phase 1 and 2 reports do not present information regarding bonding capacities of jurisdictions or other information regarding methods of financing major capital expenditures. This information is needed in order to understand and analyze methods by which expansions in infrastructure needed to support growth may be financed.

Recommendation: Information regarding the bonding limitations, current indebtedness, and remaining unbonded capacity must be gathered and compiled for each jurisdiction. Pragmatic considerations, such as bond marketing capabilities should also be identified and analyzed. Our experience in other areas has shown that small jurisdictions frequently resort to alternative methods of financing capital expenditures, such as saving funds from one year to the next in a general purpose capital expenditure fund. The implications of these methods for timing the construction of needed infrastructure expansion must be analyzed. John Short and Associates will probably address most of these issues in a general way.

Available Land

The Phase 2 report provides breakdowns of the amounts of land in each community devoted to different purposes, including the amount of vacant land. However, in order to understand where development is actually likely to occur, and the public costs resulting from such development, further analysis of the nature and location of vacant land is needed in those communities likely to experience substantial impacts.

Recommendation: An analysis of vacant land aimed at pinpointing where and what types of development are likely to occur is needed. This analysis should take into account historical development patterns, cost, availability, public amenities, and topography. For instance, the table of "Current Land Use in Cedar City" (p. II-57) shows that 40.8% of the total land, or 1,917.7 acres, are vacant. Our windshield survey of Cedar City revealed that some of this land is not suitable or desirable for development, that much of the developable land is on the fringes and would require extension of infrastructure, and that it is possible to project, based on previous development patterns and other factors, what type of development is likely to occur in various areas.

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Standards

The Phase 2 report uses a variety of standards in its summary of public services, some derived from local practice, and others derived from national standards or government regulations. The report does not always cite the source of these standards. This is necessary in order to improve credibility. But more importantly, the report does not consistently calculate implicit local standards for each public service in each sub-area. These local standards represent the level of service actually delivered in the existing communities, and must be developed in order to project standards appropriate for baseline and with-MX growth. Once local standards have been calculated, they can be compared with standards set by state or federal regulations and guidelines. The implicit local standards can be combined with the expenditure data to yield the cost-per-unit of service corresponding to existing service levels. These cost-per-unit measures can be used to project the costs of maintaining service levels under different growth futures.

**Recommendation:** For each public service, it is necessary to calculate the service standard existing in each community. Typically, such standards will consist of a measure of output or activity level divided by the number of people served, or some other measure of system coverage. Therefore, the standard used for pumping capacity or deliverable supply in water systems can be expressed as gallons per capita per day (gpcd). Similarly, the standard for law enforcement may be law enforcement staff per thousand population or patrolmen per 1000 plus communication and administrative staff. In some cases, it will be necessary to use more than one standard to express the service standard. For instance, water system standards must be expressed in terms of pumping capacity, storage capacity, and water rights. Some development and comparison of alternative standards for services is also needed. For instance, law enforcement standards might be established by looking at annual operating and capital costs divided by the value of all personal property within the jurisdiction, as well as by law enforcement officers per thousand population. Once the standards have been established, they can be compared to the current costs required to deliver the existing standard, thereby deriving a cost-per-unit measure which will in turn be used to project the costs of maintaining existing service standards under different growth futures.

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Growth Management Policies and Capabilities

- The discussion of codes and ordinances does not specifically describe the provisions and procedures by which they are administered. For instance, the discussion of zoning in Cedar City (p. II-64) appropriately points out the effect of the ordinance and the need to review it, but does not explain or summarize the ordinance itself. Similarly, the discussion of the Building Code for Cedar City does not summarize the basic provisions of the code, the manner in which it is implemented and typical densities permitted.

Recommendation: The report should briefly described the actual codes and ordinances and the procedures by which they are implemented.

- The discussion of land use controls does not refer to staff capabilities, by in-house planning staffs, consultants or services provided by other institutions (as in the case of Cedar City's Master Plan).

Recommendation: The report should catalogue growth management staff capabilities, including all possible sources, and provide some analysis of the adequacy of these resources. This information is necessary to consider the ability of these resources to handle the demands imposed by rapid growth and the need for additional help.

- The report begins but does not complete examining the extent to which existing growthmanagement policies have actually affected growth. The report does not explicitly consider such questions as:
  - How does actual growth in recent years conform to the Master Plan?
  - Does the Planning Commission or Board stringently enforce zoning regulations or are variances frequently granted?
  - Have there been significant shifts in growth management policies in recent years, and what have these been in response to?



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Finally, the report does not explicitly address itself to the question of how these policies and apparatus will function under a rapid growth scenario created by MX deployment. What is likely to be the predominant pattern of development with MX given existing policies?

Based on our conversations with officials in Cedar City and Milford, the ability to answer these questions varies considerably from one jurisdiction to the next. While both cities have basic zoning and subdivision ordinances, Milford seems to have considered the effect of these policies in light of MX more explicitly than has Cedar City. The Mayor of Milford explained that some of these policies have been altered in order to direct MX-induced growth in accordance with the community's preferences. Cedar City, on the other hand, has not considered changing its Master Plan or ordinances in preparation for a possible spurt of MX-induced growth. Both cities did evidence a strong reliance on the Five-County Association for specific guidance and information regarding possible deployment.

Recommendation: The report should explicitly consider the questions outlined above, with an ultimate aim of attempting to project the extent to and manner in which growth management policies and capabilities will affect future development under baseline and with-MX growth scenarios. This information and analysis will permit communities to consider alternative growth policies and is necessary for the fiscal impact analysis in estimating the costs of expanding public services. For instance, policies which successfully encourage in-fill growth where infrastructure already exists will result in lower public costs for expanding infrastructure than policies which permit or encourage outward expansion away from existing infrastructure. Our tour of Cedar City showed that partially as a result of land conditions, consumer preferences, and growth policies, residential development appeared to be proceeding outward rather than filling in on vacant land, despite the fact that vacant land appears to be available. Therefore, rapid growth may result in major costs for extension of infrastructure to outlying areas. In order to pin down the extent and cost of infrastructure expansion, it will be necessary to project as accurately as possible the manner in which policies or trends will affect commercial and residential both with and without MX deployment.

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Format

While the reports as presented contain a tremendous amount of information useful to performing a fiscal impact analysis, the use of extensive narratives with tables interspersed is not the most concise form of presenting the voluminous information contained in the report. Due to the very large amount of information required for an analysis of this kind, a briefer, more schematic form of presentation may be less cumbersome and easier to work with. Also, the existing format does not clearly present the jurisdiction which is responsible for delivering the service. For instance, we don't know if Cedar City's water services are provided by the city itself or by a separate utility district.

Recommendation: Information regarding public services, infrastructure, demographic characteristics, land use and growth management policies by sub-area (usually corresponding to towns and cities) across the top, and categories of characteristics used to describe the sub-areas listed vertically along the side. An example is attached as Exhibit A. This format permits the reader to scan quickly down the column to see the characteristics of a given sub-area, or to scan across the rows to compare the sub-areas' characteristics. In order to clarify jurisdictional responsibilities for providing services, the jurisdiction providing the service should be specified at the top of each public service category in the matrix. This would clarify responsibilities both within and across geographic subareas. Presentation of the data in this manner, particularly if it includes expenditure information, will facilitate the calculation of service standards and costs-per-unit for each service. As these calculations are made, they can be added into the table under the appropriate service categories and sub-areas, again permitting easy comparison within and across sub-areas.

Accuracy of Data

Based on our limited conversations with officials in Cedar City and Milford, we found all of the data regarding public services and infrastructure presented in the Phase 1 and 2 reports to be accurate. Therefore, we have no recommendations in this area.

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B. Review and Evaluation of Phase 1 and 2 Reports: Specific  
Comments

Unlike the general comments above, which are generally applicable to the reports, the discussions which follow are addressed to specific sections of the reports.

Population Projections

We have examined in detail the various economic and demographic models generally lumped together under the acronym UPED, which provides the employment and population projections shown in the Phase 2 report. The basic theory behind UPED is that basic employment, defined as employment in industries which export goods to other economic regions, determines total employment which in turn determines population. Basic employment is determined by making linear and curvilinear projections based on county by county and sector by sector data for 1970 to 1978, taking into account specific aberrations from projected trends known or expected to occur in the future. Basic employment, thus determined, is the basic input to UPED. UPED then determines total employment and population on a year-by-year basis on a regional basis, using a variety of assumptions regarding such factors as labor force participation rates. The regional projections of population and employment are then fed to a spatial allocation model (SAM) which allocates them to thirty-three sub-areas in the MX impact area based on a set of assumptions regarding the propensities of workers to commute from one area to another and the location of secondary employment. Our specific concerns about the model include the following:

- Birthrates are assumed to remain constant throughout the projection period at the 1970 levels. The nationwide trend has been in the direction of declining birthrates (with some recent increases). The individuals calibrating the model claim that while Nevada birthrates follow the national trend, these are offset by increasing fertility in Utah. More up-to-date data is needed, however, to confirm this assumption. The current assumption of constant birthrates, if it is biased, is biased

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toward more population, and therefore, toward faster baseline and with-MX growth. If better data becomes available in the course of conducting the fiscal impact analysis, the model can be recalibrated to accommodate declining birthrates.

- Household headship rates are assumed to remain constant at 1970 values. This is generally recognized as a problem by users of the model. While it is known that household headship rates changed between 1970 and 1980, the magnitude of the change is not yet known. When this data becomes available, the model can be recalibrated to take account of this shift. It is likely that household growth is now being understated.
- Labor force participation rates within the MX impact region are assumed to converge halfway to the national average by the year 2000. This assumption is based on studies which indicate that while the rate for men is approximately constant, the rate for women in the region is increasing considerably. The net effect of the male and female trends is an overall shift toward the national rate (which is also increasing). While this assumption appears to be intuitively plausible, further examination of the data upon which it is based is needed before acceptance of it. Recent examinations of trends in Nevada indicate that fluctuating growth conditions produce unstable labor force participation rates. UPED assumptions may understate future population growth.
- Basic employment is assumed to grow at rates consistent with the linear analysis of total employment, taking into account certain expected deviations from this trend. Because of the basic importance of the calibration of this variable, it will be necessary to examine in detail the actual inputs to the model to determine the reasonableness of the deviations from the linear trends which were imposed on the rates.
- The SAM model does not explicitly take into account all of the considerations used in the Hammer, Siler, and George allocation model, such as availability of public amenities. Rather, it is primarily sensitive to the proportions of basic and residentiary employment in each sub-area and commuting among sub-areas. While the SAM model can be calibrated to produce almost any result, an allocation model similar to the HSG model may be more

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flexible and accessible. If an HSG-type model is decided upon, UPED can be recalibrated to produce population totals within each county, which would be the inputs to the allocation model.

Given these concerns, several alternative recommendations are possible with regard to the UPED projections;

1. Accept them as reasonable estimates.
2. Recalibrate the model's assumptions to yield different results.
3. Use the basic UPED population and employment outputs, but develop and use a more sensitive spatial allocation model, especially for construction-phase impacts.

Further detailed analysis is needed by consultant and local governments before deciding upon one of these courses of action, although based on our initial review, some combination of 2) and 3) may be appropriate. We have no major questions regarding the basic theoretical and mathematical underpinnings of the model, which we feel are sound.

Roads and Highways

With regard to highway maintenance, while the analysis in the Phase 2 report does quantify the with and without-MX cost by jurisdiction, the methodology used to arrive at these figures is not completely clear. The analysis appears to link current maintenance costs on a sample highway with current traffic volumes. While this information would be useful for estimating baseline maintenance costs, it is not clear how traffic volumes for the with-MX scenario were arrived at. Then, using cost factors which are not clearly displayed, the analysis arrives at preconstruction and construction costs by road segment, and shows the probable timing of needed upgrading. Finally, the analysis does not address itself to the need for new local streets and roads.

Recommendation: For each road segment, the analysis should lay out current, expected without-MX and expected with-MX traffic volumes. Then, cost estimating factors needed to upgrade or maintain roads given the differing traffic volumes must be derived from current practice, preferably in the affected jurisdictions. These cost

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estimating factors can then be multiplied by the projected traffic volumes to yield expected costs under the two scenarios. With regard to new local streets and roads, available data regarding the number of miles of different kinds of local streets needed for differing level of development can be used in combination with data developed elsewhere in the fiscal impact study regarding the extent of development in the sub-areas to determine total costs for new roads and streets by jurisdiction in the with and without-MX scenarios. The final result of these analyses will then be a table showing by jurisdiction, total costs for building new roads and streets and for maintaining roads and streets, in the baseline and with-MX futures.

Electric Power

While this section presents a great deal of useful material, especially regarding potential future sources, several elements essential to the preparation of the fiscal impact analysis are missing. Specifically, data regarding current total system costs including patronage capital, current residential and commercial rates, and total system annual and peak capacity are needed. These data are needed in order to compute total system costs under differing growth scenarios, the effect of system expansion (if any) on consumer costs, and the ability of the existing systems to absorb growth.

Recommendation: Data regarding total system costs (including capital costs), residential and commercial rates, and total system peak and annual capacity should be collected and compiled along with existing information on current usage and sources, and potential future sources. These data will permit calculation of the extent of growth which can be handled by the existing systems without increasing costs to consumers, the extent of additional capacity which may need to be developed on a community-by-community and system-by-system basis under varying growth assumptions, and the costs to consumers necessitated by the expansion of supplies in response to growth. Due to the uncertainty of some of the potential supply in future growth scenarios, it may be necessary to project costs under several different assumptions regarding potential suppliers.

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Sewer Systems

The discussion of sewer systems in the Phase 2 report contains valuable information regarding the types of treatment systems and their capacities in the various communities. However, the discussion's treatment of actual usage is somewhat vague and uneven from one community to the next. At the outset of the discussion, a range of average usage is mentioned. However, the discussions of each community use average usage figures more toward the lower end of this range without a full justification of these figures. Also, the discussion neglects information regarding total system costs (capital and operating) and rates for commercial and residential users. Finally, although cost projections are made for several different growth scenarios, the cost estimating factors used are not explicitly justified.

**Recommendation:** A more complete discussion of average usage is needed for each community, with the basis of the assumption and the assumption itself spelled out clearly. This is obviously a critical assumption since it will be used to project total usage under both baseline and with-MX scenarios, and the final bottom line on both operating and capital costs necessary to serve future populations will be very sensitive to this assumption. Data regarding current operating and capital costs are also needed so that current fiscal efforts in this area can be compared to future projections. Data regarding current rates must also be gathered since future rates may well vary according to the type and level of service demanded by future populations under varying growth assumptions. Finally, while the costs of infrastructure improvements under varying growth assumptions are clearly displayed, the cost estimating factors used to arrive at these costs need to be explicitly laid out and justified according to experience in these or comparable jurisdictions. The final result of this discussion should be an analysis of future operating and capital costs and rate structures, under the baseline and with-MX scenarios.

Culinary Water Systems

Projecting the fiscal impact of growth on water systems is one of the most important yet complex aspects of the fiscal impact analysis. The discussion of water systems in the Phase 2 report contains information regarding the three constraints on water supply in each

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community; pumping capacity, storage capacity, and water rights; and appropriately uses State standards for judging the adequacy of the systems and projecting needs for expansion of capacity under different growth scenarios. While the use of the State standards is necessary and appropriate for this purpose, it is also necessary to examine the extent to which system capacities are actually used by the existing system demands. Two pieces of information are missing in the discussion: some measure of current average usage (e.g., gallons per day) and the number of connections demanding the current average usage. This information establishes the actual implicit local standard, as opposed to the State standard. Based on the information provided, we know of cases where some systems do not meet State standards. For instance, storage capacities in Minersville and Milford are inadequate based on State standards. Hence, the State standard exceeds the local implicit standard. What we are missing is a sense of those situations in which local standards may exceed State standards. For instance, in Cedar City the discussion points out that the existing system exceeds State standards on peak flow capacity, yet it is noted that the system currently has periods where "it is difficult to meet peak demands." Therefore, what is needed is data on actual usage on both an average and peak basis. This would permit quantification of existing excess capacity and projections of actual future per capita usage under varying growth assumptions. A second possible problem with the discussion of water systems is the use of an average unit costing methodology. While this should be adequate for some purposes, such as drilling new wells, a marginal costing methodology may be needed for activities such as expansion of the distribution system.

No data regarding total system costs or rates paid by consumers are included in the discussion. These data must be gathered to permit projection of operating costs and changes in the rate structure under differing growth futures.

Recommendation: Data regarding actual system usage must be gathered and compared to system capacity data in order to determine the actual amount of excess capacity (if any) in the system. This excess capacity can be translated into the number of additional people the system could accommodate. This figure can then be compared to the number of people actually expected to be added to the current population under the different growth scenarios to give the total number of people for which the system will have to be expanded. It



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is important to remember that there are three system constraints which may have to be expanded to accommodate population growth: pumping capacity, storage capacity, and water rights. Cost estimating factors applicable to the type of expansion required to accommodate growth in each system can then be applied to the extent of growth expected to yield the total costs of expansion. It will also be necessary to project a schedule timing the expansion of the systems in advance of actual population growth.

Data regarding total system costs and rate structures must be gathered in order to understand current operating costs and to use as a basis for projecting future operating costs. Since not all water systems are self-supporting, the increasing operating costs resulting from expanding supply may result in higher water rates, increased tax support, or a combination of the two.

It will be necessary to define on a case-by-case basis where average and marginal costing methodologies are appropriate. In general, average costing is appropriate where an existing system can be expanded. In both cases, cost estimating factors can be derived from the experience of jurisdictions in the impact areas.

Education

The report's method of specifying construction needs on a building-by-building basis is excellent. However, we have a number of specific concerns with other aspects of the discussion of education:

- It appears that the age bracketing of on-base kids (Table IV) is based on the percentage of kids by grade as it exists now for that area's schools. This significantly overstates the military-related secondary students and may understate the elementary students.

Recommendation: Reapportion the age bracketing of school children to reflect realities regarding the likely ages of military-related students. Whereas nationally, about 1/3 of all kids are of secondary school age, 1/3 are of elementary school age, and 1/3 are pre-school, for military children the proportions are 20% secondary, 35% elementary, and 45% pre-school. Also, the proportions differ for on-base and off-base families (the report assumes they are the same). If on-base housing is built for lower-ranked personnel, then the on-base students will be primarily pre-school and elementary.

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- Table IX shows a linear teacher/staff ratio and seems to assume that staff levels are a function of the number of teachers. Each building has a principal, secretary, maintenance personnel and others. These only increase slightly if more teachers are added, but increase sharply if another building is added. Therefore, the ratio of staff to teachers increases in chunks rather than in a linear fashion.

Recommendation: The analysis of ancillary staff should take account of the fact that ancillary staff increase in response to the number of buildings rather than the number of teachers. This modification should not be difficult since the analysis of education is done on a building-by-building basis.

- The report implicitly equates classrooms with teachers. The report implies that the average classroom can accommodate 26 students even though there are currently approximately 22 per classroom. However, an increase in the teacher/student ratio from 1:22 to 1:26 represents a real decline in the level of service.

Recommendation: Since the implicit local standard of service is a teacher student ratio of 1:22, this must be used in the projections. If the 1:26 ratio is used, then there must at least be some analysis of who should bear the cost of maintaining "excess capacity."

- The report states (p. 70) that the baseline projections were modified on the basis of discussions with school officials who estimated the growth in school-age population over the next five years. Since school officials have a natural bias to overstate anticipated growth for budget purposes, the baseline growth figures may be too high. This would make the MX impacts a smaller percentage of the baseline, thereby weakening the estimate of MX impacts.

Recommendation: The baseline figures should be re-analyzed to determine whether school officials' advice has consistently biased the estimates upward and to determine whether their estimates are justifiable.

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- The report uses a construction cost assumption of \$50.00 per square foot. While we recognize that this is just a first cut, it is important to realize that given the magnitude of MX construction and other expected demands on the construction industry, costs are likely to be much higher than this.

Recommendation: Construction costs should be re-examined in the course of the fiscal impact study, giving more realistic attention to the demands upon the construction industry and the effect of the demand-supply relationship prices.

- The overall cost estimates are probably understated because they do not take account of some of the entirely new demands which MX growth will place on the school system. For instance, the schools may need to provide bilingual education, expanded vocational training, and increased counseling services.

Recommendation: While these types of costs are difficult to identify and quantify, they must be included in future estimates of services and costs in the fiscal impact analysis.

Housing

While the Phase 2 report contains useful information regarding the amount and quality of housing now available in various communities, additional information is needed in several related areas. Perhaps most importantly, data showing changes in housing supply by type in recent years are needed in order to project probable additions to housing supply in the future. Then, housing supply forecasts can be compared with housing demand created by growth projected under different scenarios to determine possible shortages and needs for additional investment in housing. Other concerns are as follows:

- The analysis of the quality of housing would be more useful if it were done by type of housing rather than for the entire supply.
- The report assumes a constant household size over the projection period. This is inconsistent with recent trends

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and forecasts which indicate declining household size for the impact area and the nation.

- The source of the projections is not cited.
- The analysis of housing affordability should address the difference between purchase and rental of mobile homes. The short-term financing arrangements for some mobile homes tend to make them less affordable, thereby leading to surprisingly high rentals.
- The housing affordability analysis should also address the ability of military personnel or construction workers to afford housing relative to the ability of current residents. The concern here is that inflation due to higher effective demand may reduce existing residents' abilities to afford existing and new housing.

Recommendations:

- It is essential that data indicating recent trends in housing supply be gathered and compiled. This will permit projection of future housing supply trends, comparison of these with projected housing requirements, and quantification of investment needed in housing to permit housing requirements to be met without excessive price inflation. One component of this analysis should be a comparison of recent trends in housing demand with population to determine the extent to which housing demand may be increasing faster than population. This comparison would obviously affect the quantification of future housing requirements.
- It is necessary to verify the supply matrix borrowed from the DEIS using actual data from recent years.
- Household size should be calibrated and projected based on the trend over the last ten years in the impact area. This is necessary in order to predict accurately housing requirements during the impact period. Use of a constant household size would underestimate housing requirements.

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- The source of the projections should be cited in order to improve credibility.
- Data regarding financing options most likely to be used for mobile homes should be gathered and analyzed, and the effect of these options on purchase price, supply, and rental costs should be examined. Short-term financing may make mobile homes less affordable than is usually assumed, thereby negatively impacting the overall housing supply picture. Also, data from other examples of military construction projects should be gathered regarding the tendency of military personnel to affect the affordability of housing for existing residents.

## PART 2. WORK PROGRAM FOR COMPLETION OF THE FISCAL IMPACT ANALYSIS

The general approach to the work program outlined below should encompass several elements:

- Maximize use of the studies already done or underway. While these studies are of varying usefulness and relevance, they should be used wherever possible to avoid unnecessary and costly duplication of work.
- Define appropriate roles for consultants, the Policy Board, Associations of Governments, and other concerned groups. Constant communication among these groups and among the local governments is necessary during the conduct of the fiscal impact analysis to assure coordination of study efforts and maintenance of proper roles. In the outline which follows, we have concentrated on explaining the consultant's appropriate role by detailing the tasks for which consulting assistance is needed.
- Undertake and complete the work in a phased approach. The work outlined below represents only the first phase of the effort, the goal of which is to develop a reasonable "first cut" which can be refined based upon refinements in available information.

### Task Group 1: Complete fiscal profile of the Utah Impact Area.

This profile has already been established for Beaver and Iron Counties. The development of the Juab and Millard profile is underway and should be completed soon. In order to make these data useful for future analysis, they should be reorganized in accordance with our suggestions in Part 1 of this report. Also, some additional data collection is necessary to fill out the profiles as noted in Part 1. While the collection of additional data would best be performed by COG's, the organization task should probably be done by a consultant. Data regarding revenues and bonding capacity is already being gathered and analyzed by John Short Associates. It will be necessary for other consultants working on Task Group 1 to coordinate with Short to assure agreement on jurisdictions of concern and other basic assumptions. Finally, consulting assistance will

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probably be required in the development of local standards for public services. To summarize, the tasks for Task Group 1 which require consulting assistance are as follows:

- 1-1 Reorganize and reformat data for use in developing projections.
- 1-2 Coordination of revenue study with other parts of the fiscal impact effort.
- 1-3 Development of local standards for each public service in each jurisdiction.

Task Group 2: Project employment, populations and household growth and housing requirements by sub-area without the MX System.

The UPED model has already provided reasonable and credible projections of employment and population for the non-MX scenario. The assumptions behind this model require some further scrutiny, however, in some areas noted in Part 1 above. The outputs of the model should be periodically re-examined during the course of the fiscal impact analysis to insure that they incorporate any new knowledge regarding private sector development or other sources of baseline growth. In order to complete this task group, which will provide the basis of the without-MX fiscal impact projection, several additional tasks remain to be completed:

- 2-1 Review and evaluate UPED projections of employment and population, paying particular attention to assumptions regarding household headship rates, birthrates, basic employment growth, and the allocation of population to sub-areas.
- 2-2 Based on UPED projections and other historical and comparative data, project household size and housing requirements by year and sub-area.
- 2-3 Verify population and household projections by application of the model to recent trends within sub-areas.

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- 2-4 Determine and reach final agreement on without-MX working projections of labor force, population, households and housing requirements by sub-area to the year 2000.

Since the UPED projections form the starting point for the remaining tasks in Task Group 2, these tasks could best be accomplished by a consultant working in consultation with the Bureau of Business and Economic Research in Salt Lake City. There may be a need, depending on the final analysis of UPED, to recalibrate the model and make additional runs.

Task Group 3:     Project MX system impacts on labor force,  
                  population, households and housing requirements by  
                  sub-area to the year 2000.

The demographic projections accomplished in this task group will form the basis for the assessment of the fiscal impacts of the MX deployment. Again, UPED projections already available will form the starting point for this work. Consulting assistance will be required, however, in the verification and evaluation of UPED projections and in the development of other projections in accordance with UPED.

- 3-1 Review and evaluate the UPED with-MX projections of labor force and population, paying attention in particular to estimates of indirect and induced employment.
- 3-2 Based on historical trends and other comparative data, project household size and housing requirements for MX deployment by year and sub-area.
- 3-3 Formulate and identify alternative assumptions regarding the distribution of military and civilian population and adjust projections of housing requirements based on these alternatives.
- 3-4 Determine and reach final agreement on working projections of employment, population, and households, and housing requirements by year and sub-area for the with-MX scenario.



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Task Group 4: Develop working allocations of MX-related, off-base population and household growth by sub-area.

Hammer, Siler and George have already developed working population allocations of base operations for Iron, Beaver and Washington Counties. This methodology, which is based on nine weighted factors such as commuting distance, water and sewer availability, and access to other public and commercial services, represents a good first cut at the allocation problem. However, further refinements to their methodology and expansion of their scope will be necessary for completion of this task group. The HSG methodology must be refined to take account of historical development patterns, probable private sector response to increased housing demand, local perceptions of desirable building sites, and perhaps most importantly, governmental response to and capabilities for managing growth. The scope must be expanded to take account of deployment area construction as well as base operations in the northern counties as well as the southern counties. We understand that Millard and Juab Counties have also begun developing a methodology for allocating population. Therefore, we assume that their initial work will provide an equivalent starting point to the HSG study for the northern counties. Therefore, the tasks requiring additional consulting assistance are as follows:

- 4-1 Review, evaluate and refine the HSG methodology to take account of individualized local conditions including growth management capacities and probable development trends.
- 4-2 Expand HSG allocation methodology and allocation methodology done in the northern counties to include construction as well as base operations.
- 4-3 Make forecasts of population by sub-area based on weighted factors and individual locational considerations including effects of both base operations and construction.
- 4-4 Meet with local officials to present and discuss reasonableness of growth allocations, acceptability of expected trends, and likely policy responses.
- 4-5 Based on discussions with local officials, adjust and reach final agreement upon working MX-induced growth allocations by sub-area.

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Task Group 5: Develop forecasts of land requirements associated with housing requirements and estimate commercial expansion and associated land requirements for commercial facilities.

These estimates are based on prior demographic projections and must be done in order to estimate the public costs and revenues which they in part determine. Consulting assistance will be needed on the following tasks:

- 5-1 Project land requirements for housing (based on prior housing requirements analysis) based on an assessment of housing choices by income, probable densities and existing land use regulations.
- 5-2 Estimate retail sales for projected population and derive associated space and land requirements for commercial facilities which will service the population.

Task Group 6: Develop preliminary estimates for capital requirements to accommodate future growth for the with and without out MX scenarios.

The Phase 2 Baseline report for Iron, Beaver and Washington Counties has already begun this task for transportation, utilities, public schools, wastewater systems, and culinary water systems. While the Phase 2 report attempts to quantify excess capacity for some other public infrastructure, it generally does not translate this information into hard cost estimates for growth. Based on our experience, this task group requires item-by-item and jurisdiction-by-jurisdiction specific analysis of future needs, based on estimating factors relevant to each type of service. This task group will emphasize realistic assessments of changes in requirements due to the magnitude of growth caused by MX deployment, recognizing that capital costs typically increase in chunks rather than in a linear fashion. This will necessarily include an assessment of how to handle existing excess capacity in consultation with local officials. In particular, it is necessary to address the issue of who bears the cost for maintaining excess capacity if local officials wish to maintain it. Tasks for which consulting services are needed include the following:

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- 6-1 Review, verify and evaluate existing assessments of infrastructure condition, capital improvement plans, and expected capital requirements without MX deployment.
- 6-2 Review, verify and further specify, where necessary, existing assessments of excess capacity. Determine capacity to accommodate growth without MX and the manner by which capital improvements could be financed.
- 6-3 Review and complete estimation of change in service levels resulting from population increases projected in previous tasks, giving due consideration to absolute changes in population levels, differences in service standards among different communities, differences in service modes for communities of different sizes, and changes in the nature of the population served (based on comparisons to other "boomtown" experiences). Estimate changes in infrastructure necessitated corresponding to changes in service levels.
- 6-4 Review and complete cost estimation of infrastructure requirements for MX deployment and estimate share of infrastructure costs attributable to MX. Cost estimating factors will be derived from local experience or comparable communities where the magnitude of growth is large. Engineering assistance may be needed to refine some of these estimates at a later date.
- 6-5 Present capital cost estimates by type of service and jurisdiction to local officials for concurrence.

Task Group 7: Make preliminary estimates of change in operating cost requirements resulting from changes in service levels.

Little work has been done in this task area so far, which involves estimation of service level changes in the more labor-intensive types of local government services, including education, law enforcement, fire protection, road maintenance, and health service, which compose the bulk of local government expenditures. In estimating the changes in service levels resulting from MX and in estimating the cost of

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these changes, consideration must be given to changes in demand for service and mode of service delivery resulting from large jumps in population size. Existing service standards may become irrelevant when the density and character of a community are fundamentally altered by a large, rapid population influx. Therefore, it may be necessary to adapt standards from comparative cities. Major tasks requiring consulting assistance are as follows:

- 7-1 Review and evaluate current levels and patterns of service and historical trends in service delivery and staffing.
- 7-2 Project non-MX growth in service requirements and costs associated with these increases.
- 7-3 Identify those services for which predicted growth is likely to alter radically delivery modes or levels, project increased service levels and associated costs.
- 7-4 Present operating cost estimates for all public services and identify share of costs attributable to MX deployment.
- 7-5 Review cost estimates with local officials and obtain concurrence.

Task Group 8:     Make preliminary revenue projections by jurisdiction, identifying revenues restricted to certain expenditures.

This task group basically comprises the set of tasks to be completed by John Short Associates, and therefore does not require detailed explanation here.

Task Group 9:     Compare expected revenues to operating and capital cost requirements and identify revenue deficits attributable to MX-related growth; prepare fiscal impact report.

This task group provides the comparison between expected costs and expected revenues indicating the fiscal impact of MX-induced growth on local jurisdictions. In addition to analyzing revenue-expenditure gaps, the consultant must project required increases in tax rates, user charges, fees, and similar items which would be required to fund

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increased operating expenditures and capital requirements. Also, bonding capacity and alternative approaches to financing capital improvements must be examined. The result of this analysis should be a year-by-year analysis of the net fiscal effect of MX-induced growth on local government and the requirements for closing revenue gaps. This analysis becomes the basis for estimates of appropriate levels of federal assistance.

- 9-1 Array expected annual operating expenditure requirements and applicable revenues by year to determine deficits or surpluses available for capital expenditures, by jurisdiction and service.
- 9-2 Array expected capital requirements by time of required expenditure for each affected service and determine the degree to which accrued or accruing revenues will be available for financing such expenditures. Compare capital requirements with bonding capacities and constraints imposed by the bond market and examine alternative methods of providing financing of required capital improvements, including calculation of percentage increases in taxes required to support debt servicing of bond sales.
- 9-3 Identify levels of capital assistance necessary for timely provision of required capital facilities in recognition of legal and other constraints on local indebtedness and for avoidance of tax burdens likely under non-MX growth conditions.
- 9-4 Identify potential sources of assistance for funding capital requirements under existing state and state programs and characterize amount and timing of receipt of funds.
- 9-5 Make preliminary estimate of special DOD impact assistance requirements to meet capital requirements attributable to the MX system.
- 9-6 Provide cumulative projection of operating expenditure deficits expected to be incurred due to MX-induced growth over a 10-15 year period by service and jurisdiction.

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- 9-7 Review estimates of impact assistance funding requirements with local officials.
- 9-8 Prepare preliminary fiscal impact report documenting all previous tasks and conclusions.